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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/649,476	08/26/2003	Huang Yongji	966.5	5380

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LARSON AND LARSON
11199 69TH STREET NORTH
LARGO, FL 33773

EXAMINER	
RIVERO, ALEJANDRO	

ART UNIT	PAPER NUMBER
2618	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/649,476	YONGJI ET AL.	
	Examiner	Art Unit	
	Alejandro Rivero	2618	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 August 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *26 August 2003* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Specification

1. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed. The following title is suggested: LOCAL WIRELESS AUDIO SIGNAL RF TRANSMITTER AND RECEIVER HAVING A SINGLE DOWNCONVERSION WITHOUT THE NEED FOR IF CARRIER SIGNAL.

Drawings

2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: **36**. The drawings are also objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: **20**. Figure 3 is objected to because it lacks reference numerals for the elements shown and because it lacks a detailed explanation in the disclosure. Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be

notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

3. Claim 19 is objected to because of the following informalities:

In line 1 of claim 19, the examiner respectfully suggests replacing "The System" with "The system". Appropriate correction is required.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-2, 5-9, 11, 13-15, 17 and 19-20 are rejected under 35 U.S.C. 102(b) as being anticipated by Borchardt et al. (US 6,215,981 B1).

Consider claim 1, Borchardt et al. disclose a system for transmitting a modulated RF carrier audio signal from a base receiver unit (Abstract), the base unit having a pair of audio input connections of which are coupled to an audio source amplification device (volume control) for receiving left and right audio signals (Column 6 lines 29-34, column 7 lines 46-65), the receiver unit having a pair of electroacoustic transducers (speakers) for reproducing demodulated left and right audio signals modulated upon the RF carrier audio signal (Abstract, column 4 lines 17-34, figure 1elements 28 and 30); the system comprising: a transmitting circuit located within the base unit and having a first antenna (Column 7 lines 28-33) and first, second and third circuits, the pair of audio input

connections of the base coupled to first circuit, the first circuit comprising an audio signal processing (reads on volume control & over modulation detection) circuit (Column 6 lines 29-34, column 7 lines 46-65), the second circuit comprising a micro control/control circuitry (Column 3 lines 35-45, where Borchardt et al. disclose control means for selecting and generating a carrier signal) and the third circuit comprising a power supply circuit and charge circuit (Column 5 lines 3-26); the audio signal processing circuit of the transmitter first circuit modulating the left and right audio signals received from the audio source amplification device for delivery upon an carrier audio signal the 900MHz range (Abstract, column 6 lines 14-45, column 7 lines 5-13); the micro control unit of the transmitter second circuit sending a control signal to the transmitter first circuit for choosing the RF carrier audio signal to be transmitted (Column 3 lines 35-45, where Borchardt et al. disclose control means for selecting and generating a carrier signal); the power supply circuit and charge circuit of the transmitter third circuit supplying all necessary DC voltage to the transmitter (Column 10 lines 30-40); the first antenna transmitting the modulated RF carrier audio signal in the 900MHz range to the receiver (Column 10 lines 15-29); and a receiver circuit located within the receiver unit and coupled to the pair of electroacoustic transducers enclosed therewithin (Column 15 lines 42-53), the receiver circuit comprising a second antenna coupled to an input network (Column 4 lines 4-7), a UHF (i.e. 900 MHz) module (reads on downconversion means, column 4 lines 7-10), filtering network (Column 8 lines 45-47, column 15 lines 42-53), a control unit and an audio amplifier (reads on volume control, column 15 lines 42-53), and the UHF module of the receiver circuit downconverting the

modulated RF carrier audio signal to an audio signal which is reproducible by the receiver unit electroacoustic transducers through audio amplification (Abstract, column 3 line 62-column 4 line 53).

Consider claim 2, Borchardt et al. disclose all the limitations as applied to claim 1 above and also disclose wherein the audio processing circuit of the transmitting circuit first circuit comprises an auto level control amplifier circuit coupled to the pair audio input connections (reads on volume control and overmodulation detector, column 6 lines 29-34, column 7 lines 46-65, column 11 lines 26-43, where Borchardt et al. disclose automatic overmodulation detection), left and right audio frequency filtering and pre-emphasis circuits coupled the auto level control amplifier circuit (Column 8 lines 43-65, elements 42, 50, 60 and 62 of figure 2A), a stereo multiplexer IC coupled to the left and right audio frequency filtering and pre-emphasis circuits (Column9 lines 43-51, elements 60, 62 and 64 of figure 2A), a UHF module coupled the stereo multiplexer IC (Column 10 lines 14-29, elements 64 and 70 of figure 2A), and the first antenna coupled to the module (Column 10 lines 14-29, elements 70 and 72 of figure 2A).

Consider claim 5, Borchardt et al. disclose all the limitations as applied to claim 1 above and also disclose wherein the power supply circuit and charge circuit of the transmitting circuit third circuit comprises of I2V DC adapter coupled to an AC power course and a voltage regulator coupled to the DC adapter for supplying a constant VC voltage to the transmitting circuit (Column 10 lines 30-52, element VCC of figure 7D).

Consider claims 6 and 7, Borchardt et al. disclose all the limitations as applied to claim 2 above and also disclose wherein the stereo multiplexer IC of the transmitting

circuit first circuit outputs a stereo multiplexed audio modulated signal having left and right audio signals and a pilot tone signal (Column 9 lines 43-67, column 10 lines 1-2) and wherein the pilot tone signal is approximately 19KHz (Column 9 lines 43-67, column 10 lines 1-2, where Borchardt et al. disclose 23.601 KHz).

Consider claims 8 and 9, Borchardt et al. disclose all the limitations as applied to claim 2 above and also disclose wherein the UHF module of transmitting circuit first circuit outputs a 912.5MHz RF carrier audio signal (Column 10 lines 14-29, column 14 lines 25-35) and wherein the first antenna transmits the modulated RF carrier audio signal (Column 10 lines 14-29).

Consider claim 11, Borchardt et al. disclose all the limitations as applied to claim 1 above and also disclose wherein the transmitting circuit first circuit UHF module comprises voltage controlled oscillator, phase lock loop circuit and a radio frequency amplifier (element 214 and 216 of figure 7C, elements 268 and 270 of figure 7B).

Consider claim 13, Borchardt et al. disclose all the limitations as applied to claim 1 above and also disclose wherein the first antenna is a quarter wavelength antenna (Column 10 lines 15-29).

Consider claim 14, Borchardt et al. disclose a system for transmitting a modulated RF carrier audio signal from a base unit to a receiver unit (Abstract), the base unit including a pair of audio input connections coupled to a transmitting circuit having an antenna (Column 6 lines 29-34, column 7 lines 28-65), the pair of audio input connections receiving left and right audio signals from an audio source amplification device (reads on volume control, column 6 lines 29-34, column 7 lines 46-65), the

system comprising: a receiver circuit enclosed within the receiver unit coupled to a pair electroacoustic transducers for receiving the modulated RF carrier audio signal (Abstract, column 15 lines 42-53) and downconverting said signal once to a second signal reproducible by the electroacoustic transducers (Abstract, column 3 line 62-column 4 line 53, where the signal is downconverted to an audible signal one time); and the receiver circuit having an antenna for receiving the modulated RF carrier audio signal (Column 4 lines 4-7), a single downconverter (reads on downconversion means, column 4 lines 7-10) and a control circuit (reads on volume control, column 15 lines 42-53).

Consider claim 15, Borchardt et al. disclose all the limitations as applied to claim 14 above and also disclose a frequency mixer, a local oscillator and a phase lock loop circuit (Elements 258, 268 and 270 of figure 7B).

Consider claim 17, Borchardt et al. disclose all the limitations as applied to claim 15 above and also disclose wherein the local oscillator, controlled by the phase lock loop circuit, produces a desired tunable frequency signal which is subsequently directed to the downconverter frequency mixer (Column 15 lines 17-26).

Consider claim 19, Borchardt et al. disclose all the limitations as applied to claim 15 above and also disclose wherein the receiver circuit control circuit produces a stable frequency signal which is used by the phase lock loop circuit as a reference frequency signal for the downconverter local oscillator (See element Vref of figure 7B which goes to element 270 (VCO)).

Consider claim 20, Borchardt et al. disclose all the limitations as applied to claim 19 above and also disclose wherein the reference frequency signal adjustable by the receiver circuit control circuit to a desired tunable frequency signal (Column 15 lines 17-25), the desired tunable frequency signal enabling the local oscillator frequency signal to be matched with the modulated RF carrier audio signal in the downconverter mixer to produce the second signal reproducible by the electroacoustic transducers (Column 15 lines 17-41, element 230 and 261 of figure 7B).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

8. Claims 3 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Borchardt et al. in view of Atkinson (US 5,701,598).

Consider claims 3 and 4, Borchardt et al. disclose all the limitations as applied to claim 1 above and also disclose wherein the micro control unit and control circuitry of

the transmitting circuit second circuit comprises audio processing circuit UHF module and first and second auto power circuits coupled (Column 3 lines 35-45, where Borchardt et al. disclose control means for selecting and generating a carrier signal, column 10 lines 30-52, element VCC of figure 7D, where Borchardt et al. disclose providing DC power and charging) and sending a control signal to a phase lock loop circuit within the transmitting circuit UHF module (see PLL of figure 7B).

However, Borchardt et al. do not disclose a CPU.

Atkinson discloses a CPU (Column 5 lines 19-21).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to use a CPU, as taught by Atkinson, in the method of Borchardt et al. for the purpose of monitoring the lock detector, controlling filter switching and providing the synthesizer with the correct frequency once a frequency signal is locked (as suggested by Atkinson in column 5 line 19-column 6 line 27).

9. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Borchardt et al. in view of Menkhoff (US 5,714,918).

Consider claim 10, Borchardt et al. disclose all the limitations as applied to claim 1 above and also disclose an auto level control amplifier circuit of the transmitting circuit first circuit a dual (left and right) equalizer amplifier (Column 6 lines 29-34, column 7 lines 46-65, column 11 lines 26-43, where Borchardt et al. disclose automatic overmodulation detection, column 8 lines 43-65, elements 42, 50, 60 and 62 of figure 2A).

However, Borchardt et al. do not disclose a monolithic integrated circuit.

Menkhoff discloses a monolithic integrated circuit (Column 2 lines 63-67).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to use a monolithic integrated circuit, as taught by Menkhoff, in the method of Borchardt et al. for the purpose of simplifying implementation of the equalizer (as suggested by Menkhoff in column 2 lines 63-67).

10. Claims 12 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Borchardt et al. in view of Craft (US 3,678,403).

Consider claims 12 and 16, Borchardt et al. disclose all the limitations as applied to claims 1 and 14 above and also disclose wherein the modulated RF audio carrier signal is downconverted once from the transmitted 900MHz range to a reproducible frequency (Abstract, column 3 line 62-column 4 line 53, where Borchardt et al disclose downconverting the signal to a reproducible frequency and the phrase "downconverted once" is interpreted by the examiner to mean that the signal has been downconverted from 900MHz to the reproducible frequency only one time, as opposed to, for example, processing the signal from 900 MHz to reproducible frequency back up to 900 MHz and down again to reproducible frequency which would no longer describe "downconverting once").

However, Borchardt et al. do not specify 10.7 MHz.

Craft specifies 10.7 MHz (Column 7 lines 18-20).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to use 10.7 MHz, as taught by Craft, in the method of Borchardt et al. for the purpose of reproducing the signal in a conventional TV or FM receiver (as

suggested by Craft in column 7 lines 18-20 and by Borchardt et al. in column 1 lines37-42).

11. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Borchardt et al. in view of Takaoka (US 3,798,550).

Consider claim 18, Borchardt et al. disclose all the limitations as applied to claim 17 above.

However, Borchardt et al. do not disclose wherein the desired tunable frequency signal is locked in reaction to the phase lock loop circuit receiving a feedback signal from the local oscillator and creating an error voltage.

Takaoka discloses wherein the desired tunable frequency signal is locked in reaction to the phase lock loop circuit receiving a feedback signal from the local oscillator and creating an error voltage (Column 2 lines 41-68, column 3 lines 1-9).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to lock the signal based on the phase lock loop circuit receiving a feedback signal from the local oscillator and creating an error voltage, as taught by Takaoka in the method of Borchardt et al. for the purpose of improving linearity and selectivity of a demodulated output signal (as suggested by Takaoka in column 1 lines 38-65).

Conclusion

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Lupinetti (US 4,905,087) discloses a UHF receiver that converts modulated carrier signals directly to baseband signals.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alejandro Rivero whose telephone number is (571) 272-2839. The examiner can normally be reached on 8:30AM-5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nay Maung can be reached on (571) 272-7882. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

AR

NICK CORSARO
PRIMARY EXAMINER